

Enhanced Bacterial Endospore Detection Method and System

Abstract of Disclosure

A method and system is presented for the detection of bacterial endospores down to limits of less than 500 CFU/mL. The method is based on the presence of a marker compound in bacterial endospores, dipicolinic acid (dpa). When complexed with Tb and excited in the UV range or by a laser source, the dpa enhances the photoluminescence emission of Tb by several orders of magnitude. A method is presented that eliminates interference from other biological materials and chemicals, thereby permitting only bacterial endospores to result in a positive response. The presence of phosphate or organophosphate ions will reduce the observability of detection. Accordingly, the present invention overcomes this problem through the addition of AlCl₃. The present invention provides methods for enhanced the release of dpa, involving both mechanical and chemical methods, which results in at least a 200-fold increase in dpa release over the prior art.